

### **REMARKS**

In order to emphasize the patentable distinctions of applicant's invention over the art, claims 1, 29, 31, 32, and 33 have been amended to recite that the fibrous mat provided by the present invention has a permeability of at least about 300 cfm/ft<sup>2</sup> measured in accordance with ASTM Standard D737 at a differential pressure of 0.5 inches of water.

Support for the foregoing amendment is provided by the specification; particularly at page 13, lines 8-10. Consequently, no new matter has been added.

Claim 34 has been cancelled to expedite prosecution. Claims 4, 6, 8, 10, 24 were previously cancelled.

Claim 30 stands withdrawn as being directed to a non-elected invention.

Claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-33 thus remain.

Applicant's invention, as recited by present claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-33, as amended, provides a nonwoven, fibrous mat comprising a blend of a major portion composed of chopped glass fibers having an average fiber diameter of about  $11 \pm 1.5 \mu\text{m}$  and a minor portion composed of fine staple fibers having an average fiber diameter of less than about  $5.5 \mu\text{m}$ . The minor portion is composed of glass or mineral fibers and comprises about 1-30 percent of the dry weight of the web. Also provided is a gypsum board faced with such a mat. In various embodiments, the gypsum board exhibits a combination of desirable structural and functional features that render it fire resistant and easily painted or otherwise given an aesthetically pleasing finish after installation with a minimum of surface preparation required. The mat has a high permeability of at least 300 cfm/ft<sup>2</sup>, permitting easy extraction of excess water ordinarily present during slurry-based manufacture of gypsum or other hydraulic set board. Surprisingly and unexpectedly, gypsum board faced in accordance with the invention with the present nonwoven glass fiber mat, has a smoother surface than boards made with known mats employing fibers having either larger or smaller average diameter. It is especially surprising and significant that the aforementioned fiber blend

results in smoother board than would otherwise be obtained in prior art mats made with fibers having a single average diameter. It is also significant that the smoothness has been attained without compromising the air permeability of the mat, permitting the water extraction essential for gypsum board formation.

Applicant continues to maintain that the Declaration Under 37 CFR 1.132 made by Alan M. Jaffee and submitted December 26, 2006, has not been given due consideration. While the Examiner has set forth a position with respect to certain of the statements made therein, applicant respectfully submits that Mr. Jaffee's averments regarding the Gill and Kajander references, contained in ¶¶27-30, remain rebutted. Applicant again maintains that the data adduced therein and the statements concerning the perspective of a person having at least ordinary skill in the pertinent art, provide strong, objective evidence of the non-obviousness of the claimed subject matter.

Claim 31 was rejected under 35 USC 102(b) as being anticipated by US Patent 4,637,951 to Gill.

The Examiner has asserted that Gill teaches a fibrous mat comprising a blend of glass fibers with a majority of base fibers and a minority of microfibers bonded together with a resinous binder. However, applicant maintains that Gill fails to disclose the air permeability of at least about 300 cfm/ft<sup>2</sup> recited by amended claim 32. Instead, Gill's mat is said to exhibit a significantly lower Frazier air permeability of between about 120 cubic feet per minute and about 260 cubic feet per minute per sq. ft. of mat. Col. 2, lines 24-28. Preferred Gill mats have about 225 cfm/ft<sup>2</sup> or less. See, e.g., claims 2-3. Examples of actual mats disclosed in the Gill specification show cfm/ft<sup>2</sup> values of 180 (col. 5, line 59) and 220 (col. 6, line 5). Consequently, applicant maintains that the Gill disclosure, which lacks any provision of applicant's permeability, cannot support an anticipation rejection of amended claim 31.

Accordingly, reconsideration of the rejection of amended claim 31 under 35 USC 102(b) over Gill is respectfully requested.

Claim 32 was rejected under 35 USC 102(b) as being anticipated by, or in the alternative, under 35 USC 103(a) as obvious over, Gill.

As amended, claim 32 now includes the same requirement as claim 31, i.e. an air permeability of at least about 300 cfm/ft<sup>2</sup>. For the reasons set forth above, applicant maintains an anticipation rejection of amended claim 32 over Gill is equally untenable.

Applicant further maintains that Gill does not render obvious the subject matter of amended claim 32. Applicant respectfully traverses the basis on which the present 102/103 rejection of claim 32 was rendered. The Examiner's attention is respectfully drawn to MPEP §2112 and the heading for section (III) thereof:

III.A REJECTION UNDER 35 U.S.C. 102/103 CAN BE MADE WHEN  
THE PRIOR ART PRODUCT SEEMS TO BE IDENTICAL *EXCEPT*  
*THAT THE PRIOR ART IS SILENT AS TO AN INHERENT*  
*CHARACTERISTIC*

[emphasis added]

In the present instance, applicant maintains that the factual predicate making a 102/103 rejection proper is clearly missing. Far from being silent, Gill discusses permeability at length and gives specific quantitative values, making it untenable to regard the permeability of Gill's mat as an inherent but unrecognized or untested characteristic. Even with the optimization carried out by Gill, the resulting mat exhibits values of permeability far less than those provided by applicant's mat. The highest permeability disclosed by Gill is 260 cfm/ft<sup>2</sup> (col. 2, line 27), and he prefers a value of no more than 225 cfm/ft<sup>2</sup> (Abstract and claims 2, 3, 10, and 12). Applicant respectfully submits that any disclosure by Gill that porosity can be controlled by adjusting the microfiber content falls far short of any teaching that applicant's particular value of 300 cfm/ft<sup>2</sup> recited by amended claims 1, 29, 31, 32, and 33 could be attained.

Applicant maintains that in fact, Gill teaches away from higher values of permeability. Central to Gill's mat is that it inhibit "strikerthrough," defined as "the

inadvertent or undesired seeping through the thickness of the mat by the polymer substance while in its liquid state.” Col. 1, lines 28-30. Reducing air permeability is taught as one means for accomplishing this end: “A second approach would be to decrease the porosity of the fibrous mat to arrest or prevent such penetration.” Col. 1, lines 39-40. Thus, a skilled person would be led away from any attempt to alter the fiber content and binder of the Gill mat to attain higher permeability, lest the resulting mat become vulnerable to strikethrough.

Under MPEP §2144.04, legal precedent may be used as a basis for an obviousness rejection, but only if the facts in a prior legal decision are “sufficiently similar to those in an application under examination.” The Examiner has pointed to MPEP §2112, and its citation of *In re Fitzgerald*, 619 F.2d 67, 205 USPQ 594 (CCPA 1980), as a basis for her reasoning. The *Fitzgerald* court relied, in turn, on *In re Best*, 562 F.2d 1252, 195 USPQ 430 (C.C.P.A. 1977). Applicant maintains to the contrary that Gill’s own teaching of a substantially lower maximum air permeability negates any contention that the facts “are sufficiently similar” or that prima facie obviousness has been established. The importance of satisfying this threshold test of sufficient similarity was recognized in *Ex parte Skinner*, 2 USPQ2d 1788, 1789 (B.P.A.I. 1986), wherein such a showing was required before the requirement (“this burdensome task”) to show the lack of inherency can be invoked, as it was in the present instance. Applicant respectfully maintains that the Examiner’s rejection does not rise to this level, because it does not provide sufficient evidence or scientific reasoning (as required also under MPEP §2112 ) to establish the reasonableness of the Examiner’s belief that the functional limitation on air permeability is an inherent characteristic of the prior art Gill mat, despite contrary disclosure. At best, the Examiner has made a merely conclusory statement that the Gill mat could be altered.

Applicant instead maintains that the proffered 103 rejection over Gill fails to establish that a skilled person would have any motivation to modify the Gill teaching, even if it were possible, to attain a 300 cfm/ft<sup>2</sup> permeability, all the more in view of Gill’s teaching that at most 225 cfm/ft<sup>2</sup> is preferred. Applicant maintains that the

requirement that a rejection establish such motivation under *Graham v. Deere* was affirmed by *KSR*.

For the reasons set forth above, applicant maintains that the mat of claim 32 is not rendered obvious by Gill.

Accordingly, reconsideration of the rejection of claim 32 alternatively under 35 USC 102(b) or 35 USC 103(a) over Gill is respectfully requested.

Claims 1-3, 5, 7, 9, 11-15, 17-18, 25, 28, 29, and 31-34 were rejected under 35 USC 103(a) as being unpatentable over US Patent 4,647,496 to Lehnert in view of US Patent 5,389,716 to Graves in further view of US Patent 4,637,951 to Gill. In view of the cancellation of claim 34, this rejection will be discussed with respect to the remaining claims, as amended.

Lehnert et al. provides an exterior finishing system for a building, such as a fibrous mat-faced gypsum board having a water resistant, set gypsum core.

The Examiner again asserts the position that Lehnert teaches a fibrous mat-faced gypsum board comprised of a gypsum core that is sandwiched between two sheets of glass mat. It has been further alleged that Lehnert teaches glass fibrous mat made from chopped fiber in a resinous binding, such as modified urea-formaldehyde.

In response, applicant has observed that Lehnert calls for facers that are porous glass fiber mats. See, e.g., col. 4, line 57. In addition, Lehnert discloses gypsum that penetrates “but part-way into the thickness of the mat” of one board face (col. 4, lines 59-60) and “substantially through the thickness of the mat” at the other face (col. 5, lines 5-6 and 24-31). It is said to be necessary for the mats to be permeable to allow the high water content of the gypsum slurry to be extracted as liquid or vapor during the production and board curing (col. 9, lines 8-16).

The Examiner has acknowledged that Lehnert does not teach the fiber sizes and compositions of the glass fibrous mats recited by applicant's independent claims 1, 29, 31, 32, and 33. Significantly, Lehnert employs mats that are said to be known and commercially available, thereby distinguishing applicant's mat. Col. 9, lines 28-31.

Accordingly, she has cited Graves, which discloses a binder composition for fibrous mats that is said to be fire resistant when cured. The mats are said to be suitable for a backing layer for gypsum.

The Examiner has reiterated a position that Graves discloses that glass fibers improve the structural foundation of finished mats, and that fibers of varying sizes may be blended together to form the mat. It is said that by varying the length and diameter of the fibers the structural properties can be altered. However, any such disclosure falls far short of the particular ranges delineating applicant's mat and gypsum boards faced therewith. Significantly, the addition of Graves to Lehnert does not cure the lack of disclosure of the beneficially smooth surface provided by applicant's invention, and as established by data both in the instant specification and as provided by the Jaffee Declaration.

Recognizing the deficiency of even the Lehnert/Graves combination, the Examiner has further cited Gill et al., which is directed to a fibrous mat facer said to exhibit improved strikethrough resistance. The mat is said to be especially suited as a carrier, substrate, or facer for various curable materials that are placed on one surface of the mat while in a liquid state. Gill et al. further discloses a laminate comprising the foregoing mat and a vinyl plastisol coating or a coating of a foam insulation material such as polyurethane or polyisocyanurate foam. The Examiner has particularly pointed to Graves' reference to Gill as disclosing a mat that is more porous than mats made by previous methods.

Applicant maintains his traverse of the Examiner's contention that the combination of Lehnert, Graves, and Gill discloses or suggests the subject matter of applicant's claims, as well as the propriety of combining the references in the manner proposed.

In support of the traversal, applicant submits that the fibrous mat provided by Gill et al. is used for an entirely different purpose than applicant's mat. In particular, the Gill mat is said to be especially useful when forming composite materials employing a curable thermoset, such as a foamable material such as a polyurethane or

polyisocyanurate rigid foam board, or as a carrier web in the vinyl flooring industry. In both instances, the mat is said to be “resistant remarkably” to strikethrough. The need for relatively high permeability for mat useful in forming gypsum board would lead a skilled artisan away from combining Gill, which does not teach a gypsum or like construction board, and also teaches avoidance of strikethrough, an objective diametrically opposed to the level of porosity needed for gypsum board fabrication.

Furthermore, applicant respectfully submits that the statement that Gill provides a more porous mat (as noted by Graves) must be understood in the context of the entire Gill disclosure. Gill does not provide an open-ended teaching with respect to porosity (or permeability). Significantly, Gill regards even mats with much lower permeability than applicant’s 300 cfm/ft<sup>2</sup> as being “porous.” See, e.g., claim 1, directed to “A porous, non-woven fabric mat...” Applicant maintains that a skilled person would understand that “porosity,” as used by Gill, is based on a comparison with highly impermeable mats, such as the mat provided by U.S. Pat. No. 4,186,236, which includes a coating using a thixotropic asphalt emulsion. The resulting mat is said to be pin-hole free and relatively impenetrable to a liquid settable material. See col. 1, lines 41-48. Clearly, such a mat is incompatible with gypsum board production, which necessitates sufficient porosity/permeability to allow water in the gypsum slurry to be extracted.

Instead, Gill’s disclosure, as noted above, is constrained by requirement of inhibiting strikethrough. By way of contrast, embodiments of the Lehnert gypsum material require at least some amount of strikethrough to achieve the preferred structure delineated, e.g. at col. 5, lines 24-27. Lehnert teaches that strikethrough is required in order to create a fibrous mat-faced gypsum board that is structurally sound enough for use on the exterior of buildings, which is a stated purpose (col. 1, lines 7-18).

In fact, Lehnert goes on to disclose that the fibrous mat comprises material which is capable of forming a strong bond with the set gypsum comprising the core of the support surface (col. 9, lines 17-19). The manufacture of the preferred forms of board can be accomplished by controlling the viscosity of the aqueous slurry of the calcined gypsum in a manner such that the slurry penetrates the underlying and overlying mats to

the desired degree. In manufacturing each of the preferred forms of board, the viscosity of the slurry should be such that it penetrates the thickness of the overlying mat over the entire surface area thereof (col. 13, lines 5-13).

Were the Gill mat modified in the manner contemplated by the Examiner, it would become unworkable for the production of Gill's products, such as flooring and foamed insulating board. See, e.g., claims 10-12 of Gill. Applicant is unable to locate any disclosure or suggestion in Gill that a mat having a permeability of 300 cfm/ft<sup>2</sup> would be compatible with any of the uses for which the Gill mat is appointed. It is thus maintained that the Examiner's motivation, in express contradiction to the teaching of Gill, is plainly a hindsight reconstruction based on applicant's own disclosure as a template.

Thus, it is respectfully submitted that, Lehnert teaches away from any combination that would seek to use a fibrous mat whose purpose is to limit strikethrough of components as much as possible.

In context, these factors would provide a skilled artisan no basis even to try to use the Gill mat to manufacture a Lehnert gypsum board. Rather, the artisan would instead eschew the Gill mat for making gypsum board, based on Gill's teaching pertaining to inhibited strikethrough.

In seeming contradiction, the Examiner contends both that "Gill teaches the claimed fiber mat" and that "It is not clear if the claimed mat is different from Gill." See page 17, second paragraph, lines 3 and 9 of the instant Office Action. However, these contentions do not account for the difference in functional properties between applicant's mat and Gill's. Applicant's requirement of a permeability of at least 300 cfm/ft<sup>2</sup> is submitted to be a structural requirement, albeit stated functionally, that the Gill mat does not include. Significantly, Gill discloses a mat requiring a binder comprising a water miscible combination of a heat settable binder resin and an effective amount of a compatible wet proofing polymer resin. See, e.g., the final clause of claim



1. The Examiner's position equating the mats apparently fails to take cognizance of this Gill requirement.

Applicant is unclear as to the pertinence of the Examiner's statement that the "claims and the specification do not teach whether or not strikethrough is related to the claimed invention." Instant Office Action, page 17, second paragraph, final sentence. Clearly, applicant is entitled to considerable freedom in how his invention is claimed, as long as the statutory requirements of 35 USC 112 are satisfied, as they are here.

Rather, applicant's argument pertains to the propriety of combining Gill with Lehnert in the manner proposed.

The need to avoid strikethrough is a particular consequence of the types of materials to which the Gill mat is applied, e.g. rigid foam board and vinyl flooring. These materials do not include gypsum board. See col. 4, lines 35-43.

In fact, Gill further recognizes control of porosity as a conventional means of limiting strikethrough. Col. 1, lines 38-39. By delineating the importance of his mat preventing strikethrough, Gill expressly creates an aversion for using any fiber configuration taught in a mat used in examples in which some degree of penetration of the faced matrix is important, such as gypsum board. Notably, each of Gill's examples (i.e. Examples 1 and 2) specifically notes the lack of strikethrough penetration as important.

Given the distinctions set forth above, it is submitted that the reconstruction proposed by the Examiner is precluded, in view of *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). See also *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH* ["A prior art reference may be considered to teach away when 'a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.'" 139 F.3d 877, 45 USPQ2d 1977, 1984 (Fed. Cir. 1998), quoting *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994).] and *McGinley v. Franklin Sports, Inc.* ["We have noted elsewhere, as a 'useful general rule,' that references that teach away cannot serve to create a prima facie case of

obviousness.” 262 F.3d 1339, 1354, 60 U.S.P.Q.2d 1001 (Fed. Cir. 2001) (citing *In re Gurley, supra*)].

Applicant thus respectfully submits the purpose of producing a mat that is resistant to strikethrough, is diametrically opposite to allowing for the penetration of gypsum “but part-way into the thickness of the mat” of one board face (col. 4, lines 59-60) and “substantially through the thickness of the mat” at the other face (col. 5, lines 5-6 and 24-31), As disclosed by Lehnert at col. 4, lines 59-60; col. 5, lines 5-6 and 24-31.

Graves is not seen to remedy the deficiencies of Gill and Lehnert, and the Examiner does not site graves for such. Graves is cited for its relevance to fire resistance.

The facts herein stand in marked contrast to the situation addressed by the Supreme Court in its recent decision in *KSR v. Teleflex*, 127 S. Ct. 1727 (2007), wherein elements in a combination carried out their ordinary function. On the other hand, in the present situation, the various mats provided by Lehnert, Graves, and Gill play diametrically opposed functions, as set forth above. What the Supreme Court regarded as motivation to combine references is clearly inapplicable here. See *KSR* at 1740, quoting *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 96 S. Ct. 1532, 47 L. Ed. 2d 784 (1976).

For at least these reasons, it is submitted that the combination of Lehnert, Graves, and Gill does not disclose or suggest a gypsum or other hydraulic set board having the outstanding combination of structural and functional properties afforded by the gypsum board recited by present claims 1-3, 5, 7, 9, 11-15, 17-18,, 25, 28, and 29, , the facer of claims 31-32, and the hydraulic set board of claim 33.

Accordingly, reconsideration of the rejection of claims 1-3, 5, 7, 9, 11-15, 17-18, 25, 28, 29, and 31-34 under 35 USC 103(a) as being unpatentable over the combination of Lehnert, Graves, and Gill is respectfully requested.

Claims 18-23 were rejected under 35 USC 103(a) as being unpatentable over Lehnert in view of Graves and Gill and further in view of US Patent Application Publication US 2003/0032350 to Kajander et al., which is directed to a foam coated nonwoven fibrous mat said to have properties rendering it particularly suited for a facer on gypsum wallboard.

The Examiner has acknowledged that the combination of Lehnert, Graves, and Gill fails to disclose the particular binders recited by claims 18-23, and has thus cited Kajander et al. However, the Examiner has not pointed to any disclosure or suggestion in Kajander et al. of the particular fiber sizes and amounts required by applicant's claims. Therefore, it is respectfully submitted that even the addition of Kajander et al. fails to cure the deficiency in the combination of Lehnert, Graves, and Gill.

Applicant respectfully submits that the subject matter of claim 1 is not disclosed by Lehnert, Graves, and Gill for at least the reasons set forth above. Kajander et al., even in any combination of these references, does not cure this deficiency. Accordingly, claims 18-23, which depend from claim 1, are patentable for at least the same reasons as claim 1.

Accordingly, reconsideration of the rejection of claims 18-22 under 35 USC 103(a) as being obvious over the combination of Lehnert, Graves, Gill, and Kajander et al. is respectfully requested.

Claims 16 and 25-28 were rejected under 35 USC 103(a) as being unpatentable over Lehnert in view of Graves and Gill in further view of US Patent Publication US 2004/0209071 to Carbo et al., which discloses acoustical tiles, also known as acoustical panels, ceiling tiles, or ceiling panels, that are said to inhibit the growth of fungus, bacterial and other micro-organism.

Applicant respectfully submits that Carbo is not seen to remedy the above cited deficiencies of Lehnert, Graves and Gills. The Examiner has not pointed to any disclosure in Carbo that remedies this deficiency, and indeed, Carbo is only cited for its relevance to mold resistance.

As such, it is respectfully submitted that, claims 16 and 25-28, which depend from claim 1, are patentable for at least the same reasons as claim 1.

Accordingly, reconsideration of the rejection of claims 16 and 25-28 under 35 USC 103(a) as being obvious over the combination of Lehnert, Graves, Gill, and Carbo et al. is respectfully requested.

### CONCLUSION

In view of the foregoing remarks, and the Rule 132 Declaration by Alan M. Jaffee submitted on December 26, 2006, it is respectfully submitted that the present application has been placed in allowable condition. Reconsideration of the rejection of this application and allowance of claims 1-3, 5, 7, 9, 11-23, 25-29, and 31-34, as amended, are earnestly solicited.

Respectfully submitted,

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